

ON THE CAUSES OF DEATH
IN THE
SCOTTISH WIDOWS' FUND
LIFE ASSURANCE SOCIETY

From 1st January 1860 to 31st December 1866.

BIBLIOGRAPHY
COLLECTED
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EDINBURGH: PRINTED BY THOMAS CONSTABLE,
PRINTER TO THE QUEEN, AND TO THE UNIVERSITY.

1868.

“ Be absolute for Death ; either Death or Life
Shall thereby be the sweeter.”

Measure for Measure.

ANOTHER septenary has run its course ; and we are invited to record and review the Causes of Death among the assured of the SCOTTISH WIDOWS' FUND SOCIETY during that period,—comparing the mortality with that of previous corresponding intervals, and endeavouring to deduce therefrom lessons for our guidance in the time to come.

The Society is now of mature growth. The period which has elapsed since the last Investigation has carried us beyond the age of half a century, and placed the few remaining of our earliest Members in the venerable rank of those who have far exceeded the usual duration of life.

Our experience is almost that of a lifetime. The average age of those who seek the benefits of Life Assurance is, at entry, nearly that of thirty-five years ; so that in the wide-spread family constituting the SCOTTISH WIDOWS' FUND, embracing all ranks, from the highest to the humblest citizenship, we have the means of determining, with considerable accuracy, the value of human life between the period of early manhood and extreme old age ; of estimating in some measure the influence of professions, trades, and occupations on health and longevity ; and the prevalence and fatality of disease in connexion with family predisposition and hereditary descent.

It still remains a subject of regret that, in carrying out these investigations connected with the records of Life Assurance, our statistics are so imperfect and so unsatisfactory ; that the life examined, and selected or declined to-day, does not again, except in occasional instances, come under our observation ; that the value of selection is, after all, so short-lived and uncertain ; and that sub-

sequent years afford no history of the risks and dangers the life has undergone, of the diseases it has encountered, or of the changes which death has wrought in the family circle; so that in the large proportion of our membership the record is confined to the history of the day of entrance and that of death, when the accustomed schedule tells us that he died not by his own hand, or the hand of justice, but that he died of one or other of those maladies which make up the list of our Nosological Tables;—the certificate too often bearing that one of the symptoms of a complicated disease has been assigned as the cause of death. It is not less to be regretted that the medical attendant, in certifying the cause of death, is so often satisfied by merely recording the name of the fatal disease, without referring to its connexion with other morbid conditions from which it sprang,—substituting Dropsy, for instance, in place of Liver, Kidney, or Heart Disease; specifying Atrophy, Debility, and such like, without a clue to their real origin; or Natural Decay in place of one or other of the many, it may be obscure, diseases which terminate extreme old age.

The septenary recently completed has made an addition of 1398 to the list of deceased members, and raised the deaths from 2307,—the number declared at the former investigation,—to 3705,—the total mortality from the commencement of the Institution in 1815 to the close of 1866,—a period of fifty-two years. The average expectation at entry of the 1398 deceased was 26 years 11 months, the average actual endurance of the policies was 17 years 5 months, and the mean age at death was 58.0954 years. During the septennium the number of members has increased from 9103, at 1st January 1860, to 13,493, at 31st December 1866.¹ The total number of lives exposed to the risk of mortality during the septennium was 15,808. The calculated equivalent number at risk for the seven years is 11,112.

The following Table shows the number of deaths from the different causes, according to the arrangement of the Registrar-General, and the difference in each class between the present and two former Investigations:²—

¹ The average age of these lives at 31st December 1866 was 45 years.

² For the Tables accompanying this Report, I am largely indebted to Mr. William Braid of the Society, to whom I beg to acknowledge my obligations.

CAUSES OF DEATH.	PERIOD.			PERIOD.		
	1846 to 1852.	1853 to 1859.	1860 to 1866.	1846 to 1852.	1853 to 1859.	1860 to 1866.
i. <i>Epidemic and Contagious Diseases.</i>						
1. Small-pox,	0	4	5			
2. Scarlatina,	1	5	3			
3. Diarrhea,	3	7	15			
4. Dysentery,	16	10	11			
5. Cholera,	27	17	10			
6. Influenza,	8	6	6			
7. Fever (Remittent),	2	0	0			
8. Fever (Continued),	63	48	78			
9. Erysipelas,	10	9	12			
10. Yellow Fever,	0	0	3			
11. Hydrophobia,	0	1	0			
12. Diphtheria,	0	0	1			
				130	107	144
ii. <i>Diseases of Uncertain Seat.</i>						
1. Inflammation,	0	2	2			
2. Haemorrhage,	1	0	4			
3. Dropsy,	4	4	6			
4. Abscess,	0	3	4			
5. Mortification,	4	6	4			
6. Serofula,	0	1	0			
7. Purpura,	0	0	1			
8. Cancer,	5	28	42			
9. Tumour,	7	3	1			
10. Gout,	1	4	13			
11. Atrophy,	4	3	4			
12. Debility,	7	0	3			
13. Sudden Death,	7	5	2			
14. Pyæmia,	0	0	3			
				40	59	89
iii. <i>Diseases of the Brain and Nerves.</i>						
1. Cephalitis,	6	9	11			
2. Apoplexy,	54	67	95			
3. Paralysis,	28	79	75			
4. Tetanus,	1	1	1			
5. Epilepsy,	4	2	7			
6. Insanity,	0	3	3			
7. Delirium Tremens,	7	7	11			
8. Disease of Brain,	50	66	109			
9. Paraplegia,	0	0	1			
10. Disease of Spinal Marrow, ...	0	0	1			
				150	234	314
iv. <i>Diseases of the Respiratory Organs.</i>						
1. Laryngitis,	1	4	2			
2. Bronchitis,	36	44	91			
3. Pleurisy,	7	7	5			
Carry forward,	44	55	98	320	400	547

On the Causes of Death in the

CAUSES OF DEATH.	PERIOD.			PERIOD.		
	1846 to 1852.	1853 to 1859.	1860 to 1866.	1846 to 1852.	1853 to 1859.	1860 to 1866.
Brought forward,.....	44	55	98	320	400	547
4. Pneumonia,	15	42	43			
5. Hydrothorax,	7	7	1			
6. Asthma,	0	1	3			
7. Consumption,	42	66	96			
8. Disease of Lungs,	21	25	31			
9. Haemoptysis,	0	0	2			
10. Quinsy,	0	0	2			
				129	196	276
v. Diseases of Heart & Blood-vessels.						
1. Aneurism,	11	11	15			
2. Pericarditis,	0	2	3			
3. Disease of Heart,	55	122	203			
				66	135	221
vi. Diseases of the Digestive Organs.						
1. Enteritis,	6	9	11			
2. Peritonitis,	2	8	6			
3. Ulceration of Bowels,	3	3	2			
4. Hernia,	2	0	2			
5. Ileus,	4	5	4			
6. Haematemesis,	1	7	6			
7. Disease of Stomach & Bowels,	34	31	44			
8. Hepatitis,	5	2	3			
9. Jaundice,	3	1	0			
10. Disease of Liver,	34	49	87			
11. Disease of Spleen,.....	0	0	2			
12. Intussusception,	0	0	3			
13. Disease of Pancreas,.....	0	0	2			
				94	115	172
vii. Diseases of the Urinary Organs.						
1. Ischuria,.....	1	2	0			
2. Diabetes,	1	4	6			
3. Cystitis,	7	2	0			
4. Stone,.....	1	0	0			
5. Disease of Kidney,	15	39	51			
6. Disease of Bladder,	5	5	28			
7. Stricture,	0	0	2			
				30	52	87
viii. Childbed and Disease of Uterus.						
1. Childbirth,.....	2	1	1			
2. Ovarian Disease,	0	1	0			
3. Disease of Uterus,.....	3	0	0			
4. Phlegmasia Dolens,	0	0	1			
				5	2	2
ix. Diseases of Joints.						
1. Arthritis,	0	0	1			
2. Rheumatism,.....	3	7	5			
3. Disease of Joints,	1	5	0			
4. Disease of Spine,	0	2	0			
				4	14	6
Carry forward,.....	...	...	...	648	914	1311

CAUSES OF DEATH.	PERIOD.			PERIOD.		
	1846 to 1852.	1853 to 1859.	1860 to 1866.	1846 to 1852.	1853 to 1859.	1860 to 1866.
Brought forward,.....	...	...	...	648	914	1311
x. <i>Diseases of Integumentary System.</i>						
1. Carbuncle,	2	0	4	2	0	4
xii. <i>Violent Death.</i>						
1. Suicide,	6	6	13			
2. Drowning,	6	4	8			
3. Accidental Injury,	6	19	19	18	29	40
xiii. <i>Natural Decay and Old Age.</i>	21	29	40	21	29	40
Causes not specified or ascertainable,	1	3	3	1	3	3
Total,.....	...	...	...	690	975	1398

The deaths from all causes during the last septenium have, according to expectation, considerably exceeded those of any former period; but regard being had to the large additions made to the membership of late years, by which the numbers exposed to the risk of mortality have been greatly augmented; and to the mature age of the Society, which has brought into operation the causes of death, affecting those in the decline of life, it will be found that the *ratio* of mortality is still within the calculations of the Carlisle and other reliable Tables.

I. In regard to the class of Epidemic and Contagious diseases, it will be seen that the mortality from this source is only a little above that of the septenium 1846-52, though considerably above that of 1853-59. Fluctuations in the returns made of this class of disease must be looked for. The prevalence or absence of a severe epidemic of Fever or Cholera must seriously affect them, while, unhappily, the most careful scrutiny cannot afford the means of protecting the Society against the risk of loss from such causes.

Fever, as usual, bears the highest rate of mortality among the diseases which constitute the class,—78 deaths out of 144 being ascribed to this cause. The average expectation of these 78 insured, according to the Carlisle Tables, was 30 years 1 month; their average actual endurance was only 12 years 9 months. Little is to

be gained by a search of our records regarding the character of the localities in which the deceased resided. A large proportion were the inhabitants of our large towns,—thus, Edinburgh supplied nine; Glasgow, nine; Dundee, five; Aberdeen, one; Perth, one; while the country districts furnished twelve. In England, Liverpool gave four certificates of death from Fever; Manchester, three; London only one; while Birmingham, where there is a considerable membership, furnishes none. The English and Welsh counties furnish twelve. Ireland, regarded as peculiarly the seat of Fever, has presented claims arising from the death of twelve members from this cause, three of which are from Dublin, two from Cork, but not one from Belfast; the remaining seven being from the country districts. In addition to these home returns, we have six from our colonies, and one from the sea. Little also can be derived from an investigation into the influence of professions, trades, or occupations in promoting a predisposition to Fever. Among the seventy-eight victims, we find ten merchants, seven clerks, seven medical men, six clergymen, four writers, two inspectors of poor, two schoolmasters, two publicans, the remainder, in double or single number, being distributed over a great variety of trades and occupations; three belonging to the female sex. A reference to the Tables appended will show the period of life at which Fever has proved most fatal. A family predisposition to Fever is supposed by some to exist. One of the seventy-eight had lost his father, one his mother, and a third his brother, from Fever. One only appears to have passed through a previous attack of the kind.

Diarrhoea and Dysentery, next to Fever, have proved the most fatal of the diseases constituting the first class,—the former numbering fifteen, the latter eleven, in the list of deaths. The first (in consequence of six of the number being between 70 and 80 years of age) showing an average actual endurance of 17 years 1 month, in place of 20 years 6 months; the other (in respect of the claimants being, with one exception, under 70) giving an average actual endurance of 12 years 10 months, in place of 24 years 4 months,—their average expectation. Diarrhoea in a chronic form terminated the lives of aged men, while Dysentery in an acute shape cut short the expectation of younger lives in a few days.

A large proportion of the cases of Cholera occurred during its

epidemic prevalence in the autumn and early winter of 1866. One of the victims was the subject of mental insanity, a condition found to be the most unfavourable to the issue of the disease. The average expectation of the ten deceased was 31 years; their average actual endurance was 18 years 9 months.

Erysipelas proved fatal to twelve insured, whose average expectation amounted to 27 years 3 months, but the actual endurance of whose policies was only 18 years 9 months. Three of the twelve, however, had exceeded their expectation term.

Influenza was fatal to six aged members, who had survived their average expectation upwards of two years.

Diphtheria, a disease of youth, is not likely to occasion serious loss in the business of Life Assurance. Examples now and then occur of its appearance in more mature age. Our Tables record only one instance from the commencement of the Institution. It occurred in the case of an aged member, who had exceeded his expectation by 8 years 6 months.

II. The increased mortality in the second class arises chiefly from two causes—Cancer and Gout,—the former numbering forty-two deaths, as against twenty-eight, and the latter thirteen, as against four, in last septennial report. This is satisfactorily accounted for by the increased accuracy in the returns of the causes of death, and the increasing age of the Society, which must annually augment the number of diseases which are developed in the decline of life. Of "Gout" it has been truly said that "few die, but that more die gouty." The many diseases engendered by the gouty habit may take their place in our Nosological Tables, and exclude to some extent the real origin of them all; but a careful discrimination of the essence of the disease will lead the well-informed practitioner to tabulate Gout as not unfrequently the cause of death; and it must ever be regarded as a fruitful source of secondary disease, and, therefore, a good ground for imposing an extra rate of premium on all applicants who acknowledge and manifest its presence. Of the thirteen cases of Gout who became claims on the benefits of our Society, it was known of five that they were subject to the disease and of four others that in their immediate family there was the evidence of disorder which is often connected with and springs from it. In two instances the Gout was associated with

Erysipelas, in one with Albuminuria, and in an old gentleman of 81 years of age, it terminated in Gangrene. The average expectation of the thirteen was 27 years 9 months, the average actual endurance was 19 years 6 months.

Of the forty-two deaths from Cancer, two only occurred before 40 years of age; eleven between 40 and 50; eleven between 50 and 60; thirteen between 60 and 70; four between 70 and 80; and one above 80 years of age. The average expectation of these was 25 years 5 months; the average actual endurance was 16 years 5 months. In none of the forty-two was Cancer acknowledged on insurance as affecting any near relative. In three cases the parents of the proposer had died of affections of the Stomach and Bowels, which probably were of cancerous nature.

In regard to the seat of the disease, in ten it was in the rectum; in four, in the stomach; in four, in the bowels; in three, in the gullet; in three, in the abdomen; in one, in the liver; in one, in the brain; in one, in the eyeball; in one, in the mamma; in one, in the penis; in one, in the mouth; and in two, in the tongue. In the remainder it was not localized. There cannot be a doubt that, in recording deaths from affections of the bowels, stomach, liver, and other organs, we are too often kept in ignorance of the true cause, and that Cancer is frequently the disease which assumes a less hateful name.

III. Diseases of the Brain and Nerves add largely to our mortality returns. Advancing years bring forward an increasing number of those predisposed to these affections; but happily the loss to the Society on this occasion is comparatively light, in consequence of the large number of the insured having reached their expectation term. A reference to the Tables appended show that of the one hundred and nine who died of chronic Disease of the Brain, and whose average expectation was 27 years 5 months, the average actual endurance was 16 years 2 months;—that of ninety-five who died of Apoplexy, and whose expectation was 26 years 9 months, the endurance was 18 years 10 months;—while of seventy-five who died of Palsy, and whose average expectation was 25 years, the average actual endurance was 22 years 8 months.

The following Table exhibits the mortality from Apoplexy, Palsy, and chronic Disease of the Brain, compared with that

from all other causes, and the percentage of death at the successive ages :—

Age at Death.	From all Causes.	From Apoplexy, Palsy, and Disease of Brain.	Ratio per eent.
Between 20 and 30,.....	41	4	9.76
" 30 " 40,.....	139	17	12.23
" 40 " 50,	241	48	19.92
" 50 " 60,.....	350	66	18.86
" 60 " 70,.....	338	78	23.08
Above 70,	289	66	22.84
Total,.....	1398	279	19.95

Of the deaths through Apoplexy and Palsy, it was known, before accepting the risk, that twelve members exhibited a predisposition to these affections, that five were subject to Gout, and two to Rheumatism. In three the fatal illness was associated with Heart affection, and in two preceded by Cerebral Disease. In regard to the influence of the professions, trades, or occupations followed by the subjects of these cerebral affections, in giving any proclivity to the fatal disease, it may be stated that these extended over a great variety, but that no one appeared to have given a decided predisposition beyond another. The Church, the Law, and the Medical along with the Mercantile profession, were fully represented. No peculiar conformation of body is noticed in the applicants as giving evidence of a tendency to cerebral lesion. In like manner, as regards those who became claims in consequence of chronic Disease of the Brain, no well-marked predisposition is noticed, though, in a few instances, the circumstance of a near relative having been affected with Insanity and confined in an asylum, is referred to.

The deaths from Delirium Tremens in number bear the same relation to the general mortality as they did in former investigations; but there are good grounds for believing that concealment of the real cause of death in this, as in the case of Cancer, is largely practised; and that under the name of Cephalitis, Brain Fever, Gastric Fever, or such like, those interested in the memory of the unhappy victims of intemperance contrive to hide their shame. Of the eleven who died under the true name of Delirium Tremens, the average expectation of life was 32 years 6 months.

The average actual endurance was only 11 years 3 months. The shortest liver of all survived his acceptance four years. It is needless to say that no taint or suspicion of intemperance is recorded as attaching to any of the eleven when selected for insurance.

IV. In the mortality from Diseases of the Respiratory Organs, there is, during the septennium, a close approximation to the experience of the former periods. Of the 276 deaths from this class, 91 arose from Bronchitis, and 96 from Consumption; and it is interesting and instructive to observe that, while the former risks show an average expectation of 23 years 3 months, and maintain an actual endurance of 19 years 10 months, the latter promise an average expectation of 32 years 9 months, and present only an average endurance of 12 years 8 months—nearly four years, however, beyond the average of previous investigation. Of the deaths from Bronchitis, 12 out of 91 occurred before fifty years of age; of those from Consumption, 64 out of 96 occurred during the same period. The most fatal decennium of Bronchitis was from 70 to 80, when no fewer than thirty-two deaths occurred, while not a single death from Consumption occurred during these ten years. The most fatal decennium of Consumption was that from 30 to 40, when twenty-six deaths occurred; but, during the same period, only two cases of Bronchitis became claims. In Life Assurance statistics it will be found that the mortality from Consumption goes on in increasing ratio up to 45 years of age, and then gradually declines to 65 or 70. Bronchitis, on the other hand, commences between 30 and 40, and steadily increases its numbers up to 70 years of age. The one is peculiarly the disease of youth and early manhood, the other competes with Palsy, Apoplexy, and Disease of the Heart for the possession of advancing years and old age.

The following Table exhibits the mortality from Consumption during the last septennium, compared with that from all other causes, and the percentage of death at the successive ages:—

Age at Death.	From all Causes.	From Consumption.	Ratio per cent.
Between 20 and 30,.....	41	13	31.70
" 30 , 40,.....	139	26	18.70
" 40 , 50,.....	241	25	10.37
" 50 , 60,.....	350	21	6.00
" 60 , 70,.....	338	11	3.25
Above 70,	289	...	0.00
Total,.....	1398	96	6.87

Of these ninety-six deceased, it was known of ten that, before acceptance, they had each lost a father or mother by Consumption ; of eight, that they had each lost a brother or sister ; and of six, that they had each lost an uncle or aunt by the same disease. In several cases cousins had been affected ; and in one instance a wife had died of the disease. In fifteen other instances a suspicion attached, either personally or relatively, to the insured. An attack of Hæmoptysis at some distant period, an acknowledged susceptibility to cold, or the marks of a strumous habit, were overcome by the otherwise healthy appearance and soundness on examination ; while the circumstance of a mother dying after Childbirth, or a brother or sister of tubercular Disease of the Bowels or Brain, or of Hip Disease, or White Swelling of the Knee-joint, was not permitted to outweigh the good points in the individual himself or his family history. An instructive lesson is to be learned from these facts. In nine instances only was an increased rate of premium paid as a small protection against so much loss to the Society.

Of eleven who effected insurance after 45 years of age and died of Consumption, one survived his acceptance 20 years ; two 18 years each ; one 14 ; one 13 ; one 11 ; two 8 ; one 6 ; one 5 ; and one 1½ years.

Our Tables again show, that neither in the case of an early insurance, nor of one effected in later years, did any of the consumptive risks attain their expectation period.

Besides these ninety-six deaths from Consumption, we have to record forty-three from Pneumonia, chiefly of acute character, and thirty-one from other Disease of the Lungs of chronic nature. The former having an average expectation of 27 years, had an average actual endurance of 15 years 1 month ; the latter having

an average expectation of 28 years 10 months, acquired an average endurance of 16 years 6 months. It may be questioned whether these returns of acute and chronic Disease of the Lungs have been accurately tabulated ;—whether a portion, perhaps a considerable portion, did not properly belong to tubercular Disease of the Lungs, and fall under the Table of Consumption. It must be admitted that, in investigating the family history of the deceased, there are, in some, the records of a predisposition to Consumption ; thus, a clergyman insured at the age of 45, having lost a brother and sister from Consumption, died of Pneumonia of six days' duration ; he reached the age of 73, exceeding his expectation by five years. A lady insured at 63, having also lost a brother and sister from Consumption ; she died at 75, after a month's illness, having nearly attained her expectation term. A gentleman insured at 55, having lost a sister from Consumption ; he died of Pneumonia of three days' duration, at the age of 63, falling short of his expectation by nine years. A more doubtful case was that of a gentleman who insured at the age of 31, having lost no near relative, but having more than one affected at the time by consumptive ailments, dying himself, at the age of 35, of Pneumonia after an illness of four months. So much as regards hereditary predisposition. Let us look into the personal history of those who died from Pneumonia. One had suffered a previous attack of Inflammation of the Lungs, was accepted at the age of 41, and died of a subsequent attack at the age of 57, after an illness of seven days' duration. Another insured at 40, having suffered from Pneumonia ; he lived to 64, falling short of his expectation by little more than two years, and died of a subsequent attack after an illness of eight days. Two of the deceased had suffered from Rheumatism, and the parents of two others had died of the disease. Nineteen of the deaths from Pneumonia occurred during the eurreney of the first week of illness, and ten during the second week ; the more lingering and complicated running their course without any suspicion of Consumption, and generally far within the period usually assigned to that disease.

Among the deaths entered under the name of Disease of the Lungs, there were seven insured in whom a predisposition to Consumption might have been inferred from the family history ; two where Asthma had been acknowledged ; two who had suffered from Rheumatic Fever ; and one from Pleuro-pneumonia. Eight only

of these deaths occurred before 50 years of age, the most fatal period of Consumption, and twenty-three after that age,—fifteen taking place between 50 and 60; five between 60 and 70; two between 70 and 80; and one above 80, exceeding his expectation term by thirteen years. Still, it must be a ground of suspicion, as well as a matter of regret, that a correct nomenclature in regard to several of these deaths has not been observed, and that Disease of the Lungs has too often been returned in place of Consumption as the true cause.

Pleurisy has only accounted for five deaths against seven in each of the two former septennial returns. They all occurred in persons above 40 years of age. The average endurance fell short by ten years of the expectation. There is reason to believe that Pleurisy complicated many of the fatal cases under Disease of the Lungs, and that, while Rheumatism and Phthisis may be considered the ordinary sources of Pleurisy, Cancer and other malignant disease within the chest, affecting the bony parietes, the mediastinum, or other soft parts, is not unfrequently the true, though obscure, cause of Chronic Pleurisy.

V. In the class of Diseases of the Heart and Blood-vessels we have again a considerable increase in the number of deaths, namely, from 135 in our former septennium, to 221 in our present investigation. Chronic Disease of the Heart accounts for 203 of the 221 deaths in this class;—fifteen cases of Aneurism, and three of Pericarditis, bearing a proportional increase to the numbers at risk compared with former septennial returns. A reference to the Tables appended will show the progressive increase of death from Disease of the Heart during the six decennial periods, namely from 30 to 80 years of age, and illustrate the truth of observations advanced in previous reports, that as the number of aged risks increases, so will the deaths be found to arise in increasing ratio from Disease of the Heart. Of the 203 deaths from this cause during our present investigation, eight only occurred before 40 years of age; twenty-nine between 40 and 50; fifty-four between 50 and 60; sixty-six between 60 and 70; forty-two between 70 and 80; and four above 80 years of age,—showing that as the numbers living diminish, the ratio of deaths from Heart Disease gradually increases. We ventured, in our last report, in regard to

this source of mortality, to express the opinion that future returns would be found more favourable as regards the survivancy of these lives. On that occasion the average expectation of 122 who had died of Heart Disease was 25 years 8 months; their average actual endurance was 17 years 11 months. On this occasion the average expectation of 203 who have since become claims was 26 years, while their average actual endurance is 19 years 7 months.

The following Table exhibits the mortality from Chronic Disease of the Heart, compared with that from all other causes, during last septennium, and the percentage of death at different ages:—

Age at Death.	From all Causes.	From Heart Disease.	Ratio per cent.
Between 20 and 30,.....	41	0	0.00
,, 30 „ 40,.....	139	8	5.75
,, 40 „ 50,.....	241	29	12.03
,, 50 „ 60,.....	350	54	15.43
,, 60 „ 70,.....	338	66	19.52
Above 70,	289	46	15.91
Total,	1398	203	14.52

Our records in regard to the manner of life and death of the subjects of Heart Disease must ever be imperfect; still sufficient is known to make the history both interesting and instructive. It was known, for instance, that in effecting insurance, twenty-one had been the subjects of Rheumatic Fever or Rheumatic Gout, that three more were hereditarily predisposed by near relationship with sufferers from the disease; that seven had suffered from Gout, and six others were predisposed to it, while ten were the descendants of parents who had died of Heart Disease. An effort had been made in nine instances to cover the increased risk by extra premium. The form of lesion considered to have been the cause of death has in too many instances not been specified. In eleven returns, Valvular disease; in nine, Dilatation; in four, Hypertrophy; in five, Angina Pectoris; in three, Rupture; and in one, Embolism; while, out of proportion, Fatty Degeneration, in fifteen cases, has been assigned as the cause of death. That event was in twenty-three individuals sudden, and we are left to conjecture how and what part of the organism was affected. In nine instances only a post-mortem examination revealed its seat. Dropsy in thirty-seven cases ac-

accompanied the fatal lesion ; while Kidney, Liver, and Lung Disease, especially Bronchitis, in numerous instances added to the complications which ultimately ended in death.

VI. The deaths under Diseases of the Digestive Organs have considerably increased during the last septennium, namely, from 115 in our former, to 172 in our recent investigation. This arises chiefly from the large addition made by Liver Disease, which has nearly doubled its numbers ; while chronic Disease of the Stomach and Bowels maintains a ratio of mortality corresponding nearly with that of the last septennial period. It is difficult to account for this discrepancy. We are unwilling to ascribe it to an increase in intemperate habits, seeing that affections of the Stomach and Kidney arising from such indulgence bear a proportional increase only according to the number of lives at risk. A scrutiny into the facts brought out at acceptance, and disclosed at death, throws no light on the subject. No increase in the amount of foreign residence, and no undue addition to the trades and occupations favourable to indulgence in intemperance can be made out. A more marked attention to the prevalence of Disease of the Liver, as bearing a chief part in many complicated affections of the digestive system, and a more correct return by the medical attendant to our Nosological Tables of the cause of death, may, in some measure, explain the fact. Thus Jaundice, which has hitherto appeared in our returns as a cause of death, has no standing in our present Tables, but has, in all probability, yielded its numbers to the column of Disease of the Liver.

The average survivancy of the eighty-seven who died from Disease of the Liver was 15 years 11 months, in place of 26 years 1 month,—their average expectation of life. The average survivancy of the forty-four who died from Disease of the Stomach and Bowels was 16 years 8 months, in place of 27 years,—their average expectation term ;—a return more favourable than the same classes formerly presented.

It is worthy of remark that Hernia, a disease on account of which an extra rate of premium is generally charged, accounts for the loss of only two of our members on this occasion, and that this occurred in the case of two octogenarians whose average expectation of life was 22 years, but whose endurance fell little short of 34

years. Five deaths only from Hernia are recorded during the existence of the Society, an experience which has led the Directors to reduce the rate of extra premium to a minimum, the mortality bearing a very small proportion to the numbers affected with the disease.

VII. The deaths from Diseases of the Urinary Organs have increased considerably during the last septennium. This is again to be traced to the advanced age of the Society, which is now yearly sustaining more and more the loss of its oldest members. Among these aged risks there is no disease more common than that of the Bladder. Of the twenty-eight deaths from this cause, there were only two before 60 years of age; thirteen between 60 and 70; nine between 70 and 80; and four above 80 years of age. The average expectation of the twenty-eight was 24 years 1 month, the average endurance was 26 years 9 months. The Society has thus experienced a gain on the risks emerged from this cause. Different, however, is the result as regards the Diseases of the Kidney. Of the fifty-one deaths under this head, there were claims at all ages from 30 to 80, the larger proportion, however, being before 60. The average expectation of these was 27 years 10 months; the average actual endurance was only 18 years. A careful examination of the records of the Society previous to acceptance, fails to elicit any information calculated to raise a doubt as to the habits of these individuals; they bear, however, as on former investigations, that many were Dyspeptic, and that several were Rheumatic or Gouty. As stated in former reports, Dropsy was a frequent termination of these Renal Diseases.

VIII. The deaths in Childbed are only two in number. In one case Puerperal Fever, in the other Phlegmasia Dolens, was the fatal cause,—in the former occurring at the age of 39, one year nine months after acceptance; in the other at 36, ten years nine months after acceptance.

IX. In the class of Diseases of Organs of Locomotion are recorded six deaths,—one from Arthritis, and five from Rheumatism. The former appears to have been Gout, complicated with Kidney Disease and terminating suddenly. In the latter, Rheumatic Fever

or acute Rheumatism, to which two of the number were predisposed, shortened the duration of life, and gave an average survivancy of 2 years 2 months to the five, whose expectation was 28 years 8 months.

X. Diseases of the Integumentary System. During the former septennium no death occurred under this head; in the present scrutiny we record four from Carbuncle. It is greatly to be desired that, in returning the cause of death under this name, some notice should be taken of the constitutional disturbance under which the disease presented itself, as in many instances it is only the local manifestation of a general affection,—Diabetes and Bright's Disease, for instance.

XI. Under the head of Violent Death we record the loss of no fewer than forty of our members, against twenty-nine in our immediately preceding, and eighteen in the still prior investigation; the mortality maintaining a ratio corresponding with the number of lives at risk, and bearing a rate considerably under that experienced by other Institutions. Through Suicide, or Drowning, or Accidental Injury, these forty, whose average expectation at entry amounted to 27 years 9 months, show an average actual endurance of only 12 years 4 months. We need not record the numbers or the forms of Suicide, "Death's thousand doors stand open." We need not enumerate the modes of drowning, or specify the accidental injuries, by which so many of our members became early claims on the benefits of the Society. Let us rather rejoice that, for the mitigation of these sad calamities, there is to be found the wide portal of Life Assurance, and the provision which it offers to the widow and the fatherless.

XII. Lastly, by a remarkable coincidence, we record forty deaths also under the head of Old Age and Natural Decay,—the exact number of the Violent Deaths, and bearing precisely the same relation to the numbers of two classes which the previous septennium disclosed. Of these aged members four died between 65 and 70; two between 70 and 75; thirteen between 75 and 80; thirteen between 80 and 85; and eight between 85 and 90. The average expectation of these forty insured was, at entrance, 20 years 2

months ; their average survivaney was 28 years 3 months,—a great improvement as compared with former investigations.

Of the 1398 deaths of which we have now attempted a passing notice, 289 occurred beyond the age of 70 ; and of these, 69 were on the further side of 80. It is satisfactory to find that a special disease has been returned as the cause of death of the great majority of these old members, and that forty only have failed to find their appropriate column, and are left to rank with Old Age and Natural Decay.

I.—MORTALITY TABLE

For the Seven Years 1860 to 1866, both inclusive.

CAUSES OF DEATH.	AGE AT DEATH.							TOTAL	Average expectation at entry, according to the Cunliffe Table of Mortality.	Average actual endurance of Policies.	Mean Age of Members at Death caused by each Disease, calculated from day of Birth to day of Death.
	All up to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Above 80.				
<i>1. Epidemic, Endemic, and Contagious Diseases.</i>											
Small-pox,	2	2	1	...	...	...	...	5	Ye. Mo.	Ye. Mo.	37.4818
Scarlatina, .....	...	1	2	...	...	...	...	3	32. 1	10. 8	43.3512
Diarrhoea, .....	...	1	1	4	2	6	1	15	20. 6	17. 1	67.8484
Dysentery, .....	...	1	2	2	5	1	...	11	24. 4	12. 10	57.5200
Cholera, .....	...	3	1	3	2	1	...	10	31. 0	18. 9	53.3591
Influenza, .....	...	...	...	...	1	4	1	6	21. 6	23. 7	72.4915
Fever,	6	13	24	19	11	3	2	78	30. 1	12. 9	48.9236
Erysipelas, .....	...	1	3	2	3	3	...	12	27. 3	18. 9	59.0152
Yellow Fever,	2	1	...	...	...	...	...	3	40. 5	6. 3	26.9648
Diphtheria, .....	...	...	...	...	...	1	...	1	29. 8	38. 2	74.3095
<i>2. Uncertain Seat.</i>											
Inflammation, .....	...	...	...	1	...	1	2	20. 4	15. 5	72.2369	
Hæmorrhage, .....	...	2	...	1	...	1	...	4	28. 7	11. 4	49.3746
Dropsey, .....	...	...	3	2	1	...	...	6	22.11	18. 5	64.2834
Abscess, .....	...	1	2	1	...	...	...	4	32. 9	14. 2	48.2570
Mortification, .....	...	1	1	...	2	...	...	4	28. 6	14.10	53.2965
Purpura, .....	...	1	...	...	...	...	...	1	37. 2	19. 8	45.3151
Cancer, .....	...	2	11	11	13	4	1	42	25. 5	16. 5	58.7482
Tumour, .....	...	...	...	1	...	...	...	1	27. 0	21. 0	61.7671
Gout, .....	...	2	1	5	2	2	1	13	27. 9	19. 6	58.5327
Atrophy, .....	...	...	...	1	2	...	1	4	25. 8	27. 3	69.6281
Debility, .....	...	...	2	1	...	...	...	3	28. 1	21. 0	59.9335
Sudden Deaths, .....	...	...	...	...	1	1	...	2	25. 6	27. 7	70.6644
Pyæmia, .....	...	1	1	...	1	...	...	3	30. 7	13. 6	48.6082
<i>3. Nervous System.</i>											
Cephalitis,	1	5	1	2	1	...	1	11	30. 6	11.10	46.0315
Apoplexy,	1	6	14	26	30	14	4	95	26. 9	18.10	59.9757
Paralysis, .....	...	2	6	13	22	27	5	75	25. 0	22. 8	66.0334
Tetanus, .....	...	1	...	...	...	...	...	1	31. 4	7. 6	41.3917
Epilepsy, .....	...	3	2	1	...	1	...	7	30. 6	14.10	49.0917
Insanity, .....	...	2	...	...	1	...	...	3	23. 0	13. 2	59.7958
Delirium Tremens,	1	2	4	3	1	...	...	11	32. 6	11. 3	43.7258
Disease of the Brain,	3	9	28	27	26	15	1	109	27. 5	16. 2	56.2946
Paraplegia, .....	...	...	...	1	...	...	1	...	25. 8	35.11	78.3945
Disease of Spinal Marrow, .....	...	...	...	1	...	...	...	1	34. 4	26. 5	56.2000
<i>4. Respiratory Organs.</i>											
Laryngitis, .....	...	...	...	...	1	1	...	2	26. 2	25. 2	66.8638
Quinsy, .....	...	...	1	...	1	...	...	2	25. 0	20. 3	63.5972
Bronchitis, .....	...	2	10	14	24	32	9	91	23. 3	19.10	66.0812
Pleurisy, .....	...	...	1	2	1	1	...	5	24. 3	14.11	59.9468
Pneumonia, .....	...	6	8	15	7	5	2	43	27. 0	15. 1	55.8495
Hydrothorax, .....	...	...	...	...	...	1	...	1	18. 6	19. 3	72.6740
Asthma, .....	...	1	1	1	...	...	...	3	31. 5	12. 1	45.6557
Consumption,	13	26	25	21	11	...	...	96	32. 9	12. 8	44.9170
Disease of Lungs,	2	4	2	15	5	2	1	31	28.10	16. 6	54.5372
Hæmoptysis, .....	...	...	...	2	...	...	...	2	34. 5	22. 1	51.6602
Carry forward,	31	98	157	197	180	129	31	823	Carry forward.		

On the Causes of Death in the

MORTALITY TABLE for the Seven Years 1860 to 1866, both inclusive—

Continued.

CAUSES OF DEATH.	AGE AT DEATH.							TOTAL	Average expectation at entry, according to the Carries Table of Mortality.	Average actual endurance of Policies.	Mean Age of Members at Death caused by each Disease, calculated from day of Birth to day of Death.
	All up to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Above 80.				
Brought forward,	31	98	157	197	180	129	31	823	Brou	ght	forward.
<i>5. Organs of Circulation.</i>									Ye. Mo.	Ye. Mo.	
Pericarditis, .....	..	1	1	...	1	...	...	3	30.10	12. 8	47.5999
Aneurism, .....	..	2	2	4	6	...	1	15	28. 2	18. 3	57.8317
Disease of Heart, .....	..	8	29	54	66	42	4	203	26.	19. 7	61.1107
<i>6. Digestive Organs.</i>											
Gastritis-Enteritis, .....	..	1	2	4	3	1	...	11	28. 9	16. 3	54.6988
Peritonitis, .....	..	1	2	...	3	...	...	6	26. 4	8. 6	50.3958
Hernia, .....	..	..	..	..	..	..	2	2	22.	33.10	81.4849
Colic or Ileus, .....	..	1	..	..	1	2	...	4	21. 3	15. 1	64.6542
Intussusception, .....	..	..	..	2	1	..	..	3	31.	22. 5	57.0152
Hæmatemesis, .....	..	..	..	5	1	..	..	6	24. 7	11. 2	55.9170
Disease of Stomach and Bowels,	1	4	6	14	12	5	2	44	27.	16. 8	57.2384
Disease of Pancreas, .....	..	..	1	..	1	..	..	2	33.	19. 7	50.8424
Hepatitis,	2	..	..	..	1	..	..	3	33. 8	6. 1	37.6867
Disease of Liver, .....	..	8	23	24	20	11	1	87	26. 1	15.11	58.1147
Disease of Spleen, .....	..	..	..	1	..	1	..	2	25. 1	20. 6	64.4301
Perforation of Bowels, .....	..	..	1	..	..	1	..	2	22. 1	13. 6	61.9492
<i>7. Urinary Organs.</i>											
Diabetes, .....	..	..	1	3	1	1	..	6	27.10	15. 8	55.2286
Disease of Kidneys,	1	2	5	25	15	2	1	51	27.10	18.	56.9563
Disease of Bladder, .....	..	..	..	2	13	9	4	28	24. 1	26. 9	71.7519
Stricture, .....	..	..	..	1	..	1	..	2	25. 5	21. 1	64.1918
<i>8. Organs of Generation.</i>											
Childbirth, .....	..	1	..	..	..	..	..	1	29.	1. 9	39.3863
Phlegmasia Dolens, .....	..	1	..	..	..	..	..	1	37. 2	10. 9	36.7041
<i>9. Organs of Locomotion.</i>											
Arthritis, .....	..	..	..	1	..	..	..	1	31.	21. 2	55.8054
Rheumatism, .....	..	3	1	1	..	..	..	5	28. 8	2. 2	40.4082
<i>10. Integumentary System.</i>											
Carbuncle, .....	..	..	1	2	1	..	..	4	26. 2	11. 6	54.2856
<i>11. Violent Deaths,</i>	4	8	9	9	8	..	2	40	27. 9	12. 4	52.0141
<i>12. Old Age and Natural Decay, .....</i>	..	..	..	..	4	15	21	40	20. 2	28. 3	79.5698
<i>13. Cause not ascertainable, .....</i>	..	..	..	1	..	..	..	1	38. 7	30. 1	57.8904
<i>14. Cause not ascertained,</i>	2	..	..	..	..	..	..	2	38. 3	1. 3	25.5562
Totals,	41	139	241	350	338	220	69	1398	26.11	17. 5	58.0954

II.—ABSTRACT OF MORTALITY TABLE,

For the Seven Years 1860 to 1866, both inclusive.

CLASSES.	AGE AT DEATH.							TOTAL	Percent- age of the Deaths in each Class.	Average expecta- tion at entry, according to the Car- lisle Table of Mor- tality.	Average actual endur- ance of Policies.	Mean Age of Mem- bers at Death caused by each class of Disease, calculated from day of Birth to day of Death.
	All up to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Above 80.					
1. Epidemic, En- demic, and Con- tagious Diseases,	10	23	34	30	24	19	4	144	10.30	Ye. Mo. 28. 8	Ye. Mo. 14. 2	52.7779
2. Uncertain Seat,	...	9	17	24	26	9	4	89	6.37	26. 0	17. 0	59.0846
3. Nervous System,	6	27	58	73	80	59	11	314	22.46	27. 0	18. 2	58.8428
4. Respiratory Or- gans,	15	39	48	70	50	42	12	276	19.75	27.11	16. 4	55.5413
5. Organs of Cir- culation,.....	...	11	32	58	73	42	5	221	15.81	26. 2	19. 5	60.6827
6. Digestive Organs,	3	15	35	50	43	21	5	172	12.31	26. 5	15. 9	57.3925
7. Urinary Organs,	1	2	6	31	29	13	5	87	6.22	26. 9	20. 6	61.3248
8. Organs of Gen- eration, .....	...	2	...	...	...	...	...	2	0.14	33. 1	6. 3	38.0452
9. Organs of Loco- motion, .....	...	3	1	2	...	...	...	6	0.43	29. 3	6.11	44.2575
10. Integumentary System, .....	...	...	1	2	1	...	...	4	0.28	26. 2	11. 6	54.2856
11. Violent Deaths,	4	8	9	9	8	...	2	40	2.86	27. 9	12. 4	52.0141
12. Old Age and Natural Decay,	...	...	...	...	4	15	21	40	2.86	20. 2	28. 3	79.5698
13. Cause not ascer- tainable, .....	...	...	...	1	...	...	...	1	0.07	38. 7	30. 1	57.8904
14. Cause not ascer- tained,	2	...	...	...	...	...	...	2	0.14	38. 3	1. 3	25.5562
Total,.....	41	139	241	350	338	220	69	1398	100.00	26.11	17. 5	58.0954

III.—TABLE showing the Diseases of which Persons Assured by the Scottish Widows' Fund Society have died, from 1815 to 1866 inclusive; and the Age, by Decennial Periods, at which Death occurred.

CAUSES OF DEATH.	AGE AT DEATH.							TOTAL
	All up to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Above 80.	
1. <i>Epidemic, Endemic, and Contagious Diseases.</i>								
Small-pox,	3	3	2	1	...	...	...	9
Scarlatina,	1	5	6	1	...	...	...	13
Diarrhoea,	1	2	2	8	6	9	1	29
Dysentery,	3	2	6	7	17	6	1	42
Cholera,	4	7	14	22	10	2	...	59
Influenza, .....	...	1	4	3	10	11	2	31
Fever,	15	50	66	68	39	6	2	246
Erysipelas,	2	4	8	8	7	8	2	39
Yellow Fever,.....	2	1	...	...	...	...	...	3
Diphtheria, .....	...	...	...	...	...	1	...	1
Hydrophobia, .....	...	...	...	1	...	...	...	1
Ague, .....	...	...	1	...	...	...	...	1
2. <i>Uncertain Seat.</i>								
Inflammation,.....	...	...	1	...	2	...	1	4
Hæmorrhage,	1	2	2	2	1	2	...	10
Dropsy, .....	...	2	4	9	5	3	...	23
Abscess, .....	...	2	4	2	...	1	...	9
Mortification,	1	1	1	5	11	2	...	21
Purpura, .....	...	...	1	...	...	...	...	1
Cancer,	1	3	17	20	32	6	2	81
Tumour, .....	...	2	1	6	4	3	...	16
Gout, .....	...	2	1	8	5	3	1	20
Atrophy,	2	3	1	2	3	1	2	14
Debility, .....	...	1	2	4	10	3	...	20
Sudden Deaths, .....	...	4	3	3	3	4	...	17
Pyæmia, .....	...	1	1	...	1	...	...	3
Serofula, .....	...	...	1	...	...	...	...	1
3. <i>Nervous System.</i>								
Cephalitis,	3	11	17	13	7	...	1	52
Apoplexy,	4	16	45	72	84	37	9	267
Paralysis,	1	7	17	41	59	67	11	203
Tetanus, .....	...	...	2	2	...	...	...	4
Epilepsy, .....	...	3	5	4	...	2	...	14
Insanity, .....	...	3	4	3	...	1	...	11
Delirium Tremens,	2	8	14	5	2	...	...	31
Disease of the Brain,	7	29	63	56	58	29	3	245
Paraplegia, .....	...	...	...	...	...	1	...	1
Disease of Spinal Marrow, .....	...	...	...	1	...	...	...	1
Convulsions, .....	...	...	1	1	...	...	...	2
Carry forward,.....	53	175	317	378	376	208	38	1545

TABLE III.—Continued.

CAUSES OF DEATH.	AGE AT DEATH.							TOTAL.
	All up to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Above 80.	
Brought forward,.....	53	175	317	378	376	208	38	1545
4. Respiratory Organs.								
Laryngitis, .....	...	4	4	1	4	1	...	14
Quinsy, .....	...	...	1	...	1	...	...	2
Bronchitis,	2	10	19	34	55	52	17	189
Pleurisy,	1	3	5	4	6	1	...	20
Pneumonia,	1	11	24	34	22	15	3	110
Hydrothorax, .....	...	1	9	9	8	5	2	34
Asthma, .....	...	1	1	3	2	1	...	8
Consumption,	37	89	73	54	22	1	...	276
Disease of Lungs,	3	14	19	30	18	10	4	98
Hæmoptysis, .....	...	...	2	...	...	...	...	2
5. Organs of Circulation.								
Pericarditis, .....	...	3	3	1	2	...	...	9
Aneurism, .....	...	3	9	12	14	...	2	40
Disease of Heart,	1	25	59	117	138	75	11	426
6. Digestive Organs.								
Gastritis-Enteritis,.....	2	6	7	10	6	2	...	33
Peritonitis,	5	2	6	3	3	...	...	19
Hernia, .....	...	1	1	...	1	...	2	5
Colic or Ileus, .....	...	2	3	4	4	5	...	18
Intussusception, .....	...	...	...	2	1	...	...	3
Hæmatemesis, .....	...	1	2	7	5	1	...	16
Disease of Stomach and Bowels,	5	15	17	44	38	18	2	139
Disease of Pancreas, .....	...	...	1	...	1	...	...	2
Hepatitis,	2	1	3	5	3	1	...	15
Disease of Liver,	1	15	48	58	34	25	2	183
Disease of Spleen, .....	...	...	...	1	...	1	...	2
Perforation of Bowels, .....	...	...	1	...	...	1	...	2
Jaundice,.....	...	1	1	1	4	...	...	7
Ulceration of Bowels,.....	...	3	4	1	4	2	...	14
7. Urinary Organs.								
Diabetes,.....	...	2	3	5	3	1	...	14
Disease of Kidneys,	1	12	12	49	31	5	3	113
Disease of Bladder, .....	...	...	...	3	18	20	5	46
Stricture,.....	...	...	...	1	...	1	...	2
Ischuria, .....	...	...	...	2	...	2	...	4
Cystitis, .....	...	...	...	1	3	6	1	11
Stone, .....	...	...	...	...	1	1	...	2
8. Organs of Generation.								
Disease of Uterus, .....	...	...	4	...	1	...	...	5
Childbirth,	1	4	2	...	...	...	...	7
Phlegmasia Dolens, .....	...	1	...	...	...	...	...	1
Ovarian Dropsy, .....	...	...	...	...	1	...	...	1
Carry forward,.....	115	405	658	876	830	461	92	3437

TABLE III.—*Continued.*

CAUSES OF DEATH.	AGE AT DEATH.							TOTAL.
	All up to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Above 80.	
Brought forward,	115	405	658	876	830	461	92	3437
9. <i>Organs of Locomotion.</i>								
Arthritis,.....	...	...	...	1	...	...	...	1
Rheumatism, .....	...	4	6	4	3	...	...	17
Disease of Joints, .....	...	2	2	...	1	2	...	7
Disease of Spine,	1	...	...	...	...	1	...	2
10. <i>Integumentary System.</i>								
Carbuncle, .....	...	...	1	3	1	1	...	6
11. <i>Violent Deaths,</i>	8	26	27	30	11	1	2	105
12. <i>Old Age and Natural Decay,</i>.....	...	...	...	...	6	43	47	96
13. <i>Causes not specified or ascertainable,.....</i>	...	...	...	...	...	...	...	34
TOTALS,.....	124	437	694	914	852	509	141	3705

IV.—TABLE showing the Mortality from Consumption, Disease of Heart, and Apoplexy, Palsy, and Disease of Brain, compared with that from all other causes, and the percentage of Death at the successive Ages, from 1815 to 1866.

1. CONSUMPTION.

Age at Death.	From all Causes.	From Consumption.	Ratio per cent.
Between 20 and 30,.....	124	37	29.83
" 30 " 40,.....	437	89	20.36
" 40 " 50,.....	694	73	10.51
" 50 " 60,.....	914	54	5.91
" 60 " 70,.....	852	23	2.70
Above 70,	650	...	...
Causes not ascertained,	34	...	...
Total,.....	3705	276	7.45

2. HEART DISEASE.

Age at Death.	From all Causes.	From Heart Disease.	Ratio per cent.
Between 20 and 30,.....	124	1	0.80
" 30 " 40,.....	437	25	5.72
" 40 " 50,.....	694	59	8.50
" 50 " 60,.....	914	117	12.80
" 60 " 70,.....	852	138	16.19
Above 70,	650	86	13.23
Causes not ascertained,	34	...	...
Total,.....	3705	426	11.49

3. APOPLEXY, PALSY, AND BRAIN DISEASE.

Age at Death.	From all Causes.	From Apoplexy, Palsy, and Brain Disease.	Ratio per cent.
Between 20 and 30,.....	124	12	9.67
" 30 " 40,.....	437	52	11.90
" 40 " 50,.....	694	125	18.01
" 50 " 60,.....	914	169	18.49
" 60 " 70,.....	852	201	23.59
Above 70,	650	156	24.00
Causes not ascertained,	34	...	...
Total,.....	3705	715	19.29

